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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,875	01/29/2004	Young-Jun Kim	51813/DBP/Y35	4124

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EXAMINER

WALKER, KEITH D

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 08/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/767,875

Applicant(s)

KIM ET AL.

Examiner

Keith Walker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10 and 11 is/are pending in the application.
- 4a) Of the above claim(s) 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed on February 8, 2005 has been placed in the application file and the information referred to therein has been considered as to the merits.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over non-patent literature article "Degradation mechanism of alkyl carbonate solvents used in lithium-ion cells during initial charging" (Yoshida et al), in view of non-patent literature article "Electrochemical insertion of sodium into hard carbons" (Thomas).

Yoshida describes a lithium battery containing the same elements as stated in the specification of the instant application. Electrodes of lithium cobalt oxide and graphite are used, along with solvents of ethylene carbonate and dimethyl carbonate (Abstract). Table 1 shows a comparison of the generated gases at initial charging, where two results are shown, 28.7 volume % and 20.2 volume %, with a production of carbon monoxide (CO) less than the claimed 30 volume %.

Yoshida teaches a hydrogen gas range with a minor difference in value compared to the instant claims.

Thomas teaches the hydrogen content of carbon fibers as a function of the heat-treating temperature (Abstract). The effect of high temperature treatment can result in the modifications of the access of the metal species into the porous domain of the carbon material (Results and discussion, pg. 3304). Thomas further teaches the use of M40 carbon fibers having a hydrogen content of about 0.40%. With the volume of hydrogen being an approximate value the lower limit would be within the scope of the instant claim. It is held that when the difference between a claimed invention and the prior art is the range or value of a particular variable, then a prima facie rejection is properly established when the difference in the range or value is minor. Titanium Metals Corp. of Am. v. Banner, 778 F.2d 775, 783, 227 USPQ 773, 779 (Fed. Cir. 1985).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the graphite of Yoshida with the carbon of Thomas to produce a cell with low hydrogen generation in order to reduce the pressure rise in the battery.

3. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,573,004 (Igarashi).

Igarashi describes a rechargeable lithium battery made of graphite and lithium transition metal oxide (Col. 1, ll. 40-57). The positive electrode is prepared with lithium cobalt oxide and coated on a current collector of aluminum foil (Col. 10, ll. 21-33). The

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negative electrode is prepared using graphite and a binder mixed in a liquid medium and then coated on a current collector of copper foil (Col. 10, ll. 35-48). The coated slurry is vacuum dried at a temperature in the range of 80-350 deg. C (Col. 9, ll. 8-14). The possible binders are styrene-butadiene and cellulose compounds such as methyl cellulose and ethyl cellulose (Col. 6, ll. 13-46).

Although the instant claims do not reference a method of making the claimed lithium battery, the examiner used the process presented in the specification as a guideline for the method.

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to make a battery using the products, the process and the teachings of Igarashi, all of which are equivalent to the applicant, and expect similar results as to the instant claims.

Therefore it is shown that the teachings of Igarashi are obvious over the applicant's claims. Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product (MPEP 2113).

Response to Arguments

Applicant's arguments with respect to claim 10 over Yoshida have been considered but are moot in view of the amendments and the new ground(s) of rejection as stated above.

Applicant's arguments filed May 31, 2005 have been fully considered but they are not persuasive. Concerning Yoshida in view of Thomas, applicant argues that the 0.4 hydrogen % is twice as much as the instant claim of 0.2 hydrogen %. While applicant has support for the 0.2% in the specification, the working examples given indicate, "trace amounts" of hydrogen detected. Thomas teaches a hydrogen content of about 0.4%, which encompasses values either side of the 0.4%. Since the measured hydrogen is a percentage of the total gas volume generated, the teachings of Thomas with about 0.4 hydrogen % would be a trace amount of the total volume and therefore obvious over the claimed value. The difference in the trace amounts of hydrogen in light of the total volume of gas is considered minor and so the claims are obvious over the prior art. The use of the case law to exemplify the obviousness of claimed values as stated in MPEP 2131.03 is deemed proper.

Applicant's arguments filed have been fully considered but they are not persuasive. Concerning the rejection in view of Igarashi, the working examples taught use water as the liquid medium (11:30-62) so the process of making the batteries is the same and therefore the product and the properties would be obvious over the claimed limitations. Regarding the teachings of Igarashi using vinyl alcohol as a liquid medium, applicant admits that the moisture in the electrode causes the generation of gas. Igarashi also teaches using vinyl alcohol as the liquid medium for the electrode, which reduces the moisture content of the electrode and therefore reduces the hydrogen produced at the initial charging of the battery, thus the claimed invention is obvious over the teachings of Igarashi.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith Walker whose telephone number is 571-272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KW



PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER